

# **Optimal placement of multi-type FACTS devices in power systems using evolution strategies**

## **ABSTRACT**

In this paper, Evolution Strategies (ES) is used to find optimal placement of FACTS devices in power systems. The goal of optimization is to maximize the system loadability. Optimization is based on finding locations and settings of FACTS devices. Simulations are implemented on IEEE 30-bus test system. From different types of FACTS devices, SVC, TCSC and UPFC are used in this research. The results show that using FACTS devices, the loadability of power system increases significantly. It also shows that there exists a maximum number of devices beyond which, the loadability of power system can not be increased. The implementation results of the method are promising and encouraging, so it is a good method for implementation on the FACTS optimization problem.

**Keyword:** FACTS; SVC; TCSC; UPFC; Loadability